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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,762	04/16/2004	John Harper	119-0033US	1223

29855 7590 09/29/2006

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EXAMINER

HSU, JONI

ART UNIT	PAPER NUMBER
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2628

DATE MAILED: 09/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/826,762	Applicant(s) HARPER ET AL	
	Examiner Joni Hsu	Art Unit 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-85 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-85 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on November 18, 2005; December 15, 2005; January 20, 2006; and May 9, 2006 were filed after the mailing date of the application on April 16, 2004. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Specification

2. The disclosure is objected to because of the following informalities: According to MPEP § 608.01 (m), the present Office practice is to insist that each claim must be the object of a sentence starting with "I (or we) claim," "The invention claimed is" (or the equivalent). The phrase "Claims" is not considered equivalent to these appropriate phrases. Appropriate correction is required.

Claim Objections

3. Claim 1 is objected to because of the following informalities: Claim 1 recites "A method of editing an initial image, comprising the steps of; A first process..." where it should recite "A method of editing an initial image, comprising the steps of: A first process...". According to MPEP § 608.01 (m), each claim should end with a period, and Claim 1 does not end with a period. Appropriate correction is required.

4. Claim 4 is objected to because of the following informalities: Claim 4 recites "...further comprising the step of, using said calculated intersection..." where it should recite "...further comprising the step of using said calculated intersection...". Appropriate correction is required.

5. Claim 24 is objected to because of the following informalities: Claim 24 recites "The system of claim 22 *where in* said first..." where it should recite "The system of claim 22 *wherein* said first...". Appropriate correction is required.

6. Claim 28 is objected to because of the following informalities: Claim 28 recites "A method of creating *an* result image..." where it should recite "A method of creating *a* result image...". Appropriate correction is required.

7. Claim 30 is objected to because of the following informalities: Claim 30 recites "...where said result image *result* is both defined..." where it should recite "...where said result image is both defined...". Appropriate correction is required.

8. Claim 58 is objected to because of the following informalities: Claim 58 recites "...said function calls selected from one or more of the following options, (i) creating...(v) creating a context; and (v) rendering *a* image..." where it should recite "...said function calls selected from one or more of the following options: (i) creating...(v) creating a context, and (vi) rendering *an* image...". Appropriate correction is required.

9. Claim 63 is objected to because of the following informalities: Claim 63 recites "...said function calls selected from one or more of the following options, (i) creating of an image, (ii) creating a context; and (v) rendering *a* image..." where it should recite "...said function calls selected from one or more of the following options, (i) creating of an image, (ii) creating a context, and (v) rendering *an* image...". Appropriate correction is required.

10. Claim 71 is objected to because of the following informalities: Claim 71 does not end with a period. Appropriate correction is required.

11. Claim 74 is objected to because of the following informalities: Claim 74 recites "...comprising the steps of, A first process..." where it should recite "...comprising the steps of: A first process...". Appropriate correction is required.

12. Claim 75 is objected to because of the following informalities: Claim 75 recites "comprising the steps of Creating a first graph...(ii) create program steps for calculating and storing only the portions of any intermediary *mage*..." where it should recite "comprising the steps of: Creating a first graph...(ii) create program steps for calculating and storing only the portions of any intermediary *image*...". Appropriate correction is required.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

14. Claim 75 is rejected under 35 U.S.C. 102(e) as being anticipated by Olano (US006717599B1).

Olano describes a method for converting a first image representation into a second image representation, comprising the steps of: creating a first graph associated with the first image representation where software routines for creating such graph execute on a CPU (Col. 5, lines 3-10; Col. 4, lines 30-35; Col. 3, lines 48-53), determining an intersection of the first graph's global domain of definition and global region of interest; resolving a first node in the first graph by running software routines on the CPU to (i) determine if the first node may be combined with a second node and (ii) create program steps for calculating and storing only portions of any intermediary image that relate to the intersection (Col. 5, lines 33-60), the program steps for compilation on the CPU and execution on a GPU (Col. 4, lines 30-35; Col. 3, lines 48-53).

Thus, it reasonably appears that Olano describes or discloses every element of the claim, and therefore anticipates the claim subject.

15. Claims 79-84 are rejected under 35 U.S.C. 102(e) as being anticipated by McCrossin (US006600840B1).

16. With regard to Claim 79, McCrossin describes an image processing application program interface embodied on one or more computer readable media (Col. 6, lines 25-30), comprising a first group of services related to filter objects (Col. 6, lines 59-67); a second group of service related to image objects; a third group of services related to context objects (Col. 6, lines 51-53); and a fourth group of services related to vector objects (Col. 7, lines 14-17).

17. With regard to Claim 80, McCrossin describes that the first group of services comprise first functions to create filter objects; second functions to set filter object parameters; and third functions to obtain filter object output (Col. 2, lines 25-32).

18. With regard to Claim 81, McCrossin describes that the second group of services comprise first function to create image objects (Col. 6, lines 51-56); and second functions to render an image object to a context object (Col. 9, lines 7-18).

19. With regard to Claim 82, McCrossin describes that the third group of services comprise first functions to create context objects (Col. 5, lines 46-67).

20. With regard to Claim 83, McCrossin describes that the fourth group of services comprise first functions to create vector objects (Col. 7, lines 15-32).

21. With regard to Claim 84, McCrossin discloses an application program interface for facilitating image processing (Col. 6, lines 25-30), the application program interface comprising functions to create image objects; create context objects (Col. 6, lines 51-53); create filter objects; set filter object parameters; obtain filter object output (Col. 2, lines 25-32); and convert image objects into context objects (Col. 6, lines 51-53).

22. Thus, it reasonably appears that McCrossin describes or discloses every element of Claims 78-84 and therefore anticipates the claims subject.

Claim Rejections - 35 USC § 103

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

25. Claims 1, 2, 4-6, 8, 11-23, 25-32, 36-41, 43-47, 51-56, 58, 61-64, 66-74, and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olano (US006717599B1) in view of McCrossin (US006600840B1).

26. With regard to Claim 1, Olano discloses a method of editing an initial image, comprising the steps of a first process requesting a filter from a second process; the related filter and initial image comprising a program (Col. 6, line 50-Col. 7, line 3), said second process compiling the program, yielding a compiled program; running at least a portion of the compiled program to apply a function of the filter to the image, yielding an pixel-image result (Col. 2, lines 52-56).

However, Olano does not teach that the first process defines a relationship between the filter and the initial image. However, McCrossin discloses a method of editing an initial image, comprising the steps of a first process requesting a filter from a second process; said first process defining a relationship between the filter and the initial image (Col. 6, line 46-Col. 7, line 9).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the device of Olano so that the first process defines a relationship between the filter and the initial image as suggested by McCrossin because McCrossin suggests the advantage of reducing the amount of processing required to convert image data from the original or input format into the desired output format (Col. 1, lines 54-57; Col. 2, lines 3-24).

27. With regard to Claim 2, Olano describes having the additional step of optimizing the program (Col. 4, lines 30-36).

28. With regard to Claim 4, Olano describes that the step of optimizing includes the step of calculating an intersection, the intersection representing an area where the pixel-image result is both defined and in a result region requested of the second process (Col. 5, lines 33-60).

29. With regard to Claim 5, Olano describes the step of using the calculated intersection to limit the number of pixels that require calculation during the running of the compiled program (Col. 5, lines 33-60).

30. With regard to Claim 6, Olano describes the step of using the calculated intersection to limit the amount of memory necessary for storing calculated images (Col. 5, lines 33-60).

31. With regard to Claim 8, Olano describes that the compiled program comprises a component for a first microprocessor and a component for a second microprocessor (Col. 3, lines 45-53).

32. With regard to Claim 11, Olano describes that the first microprocessor is a CPU and the second microprocessor is a GPU (Col. 3, lines 45-53).

33. With regard to Claim 12, Olano describes that the first and second microprocessors are both CPUs (Col. 11, lines 49-50).

34. With regard to Claim 13, Olano describes that the first and second microprocessors are both GPUs (Col. 11, lines 53-55).

35. With regard to Claim 14, Olano describes that the initial image is only a color (Col. 1, lines 38-42).

36. With regard to Claim 15, Olano describes that the first process is an application program (Col. 4, lines 12-21).

37. With regard to Claim 16, Olano describes that the second process comprises a suite of graphics services functions (Col. 4, lines 15-21).

38. With regard to Claim 17, Olano describes that an operating system comprises the second process (Col. 4, lines 48-53).

39. With regard to Claim 18, Olano describes that the first process requests a high-level filter and the second process responds with an object representing a lower-level filter (Col. 4, lines 30-36).

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40. With regard to Claim 19, Olano describes that the first process (102, Figure 1) and second process (104) run on a CPU (904, Figure 9) and the compiled program runs on a GPU (903) (Col. 11, lines 53-58; Col. 2, lines 53-56; Col. 4, lines 11-21, 30-36).

41. With regard to Claims 20 and 21, these claims are both similar in scope to Claim 19, and therefore are rejected under the same rationale.

42. With regard to Claim 22, Olano describes a system for editing an initial image (Col. 6, lines 50-67), comprising a first microprocessor running a first process and a second process for servicing requests from the first process (Col. 3, lines 45-53; Col. 4, lines 11-35); a memory (802, Figure 8) for storing a filter (Col. 10, lines 20-28), the filter requested by the first process (Col. 4, lines 11-21); a second memory (802) for storing a data structure comprising information used in the first process (Col. 10, lines 20-28; Col. 6, lines 50-67), the first process causing the creation of the data structure (Col. 2, lines 45-52); a second microprocessor for running a program created using the data structure (Col. 4, lines 30-35, 54-60); a third memory (818) for storing a pixel image resulting from running the program (Col. 11, lines 14-18).

However, Olano does not teach that the data structure comprises a relationship between the initial image and the filter. However, McCrossin discloses that the data structure comprises a relationship between the initial image and the filter (Col. 6, line 46-Col. 7, line 9). This would be obvious for the same reasons given in the rejection for Claim 1.

43. With regard to Claim 23, Olano describes that the first and second memories are the same (802, Figure 8; Col. 10, lines 20-28; Col. 6, lines 50-67).

44. With regard to Claim 25, Olano describes that the first and second memories are in system memory (802, Figure 8) and the third memory is in video memory (818) (Col. 10, lines 20-28; Col. 11, lines 14-18).

45. With regard to Claim 26, Olano describes that the first microprocessor processes the data structure to produce the program for use on the second microprocessor (Col. 3, lines 45-53; Col. 4, lines 30-35).

46. With regard to Claim 27, Olano describes that the second microprocessor, under control of the program, causes the pixel image to be stored in the third memory (818) (Col. 11, lines 21-23, 32-33; Col. 4, lines 30-36).

47. With regard to Claim 28, Olano describes a method of creating a result image comprising the steps of a first process requesting the creation of a result image (Col. 4, lines 11-21); a second process servicing the requests of the first process, the servicing comprising the steps of optimizing a graph representing the result image; compiling the optimized graph; causing the rendering of the compiled optimized graph (Col. 2, lines 45-56; Col. 4, lines 30-35).

However, Olano does not teach that the first process requests the creation of a context; the first process indicating parameters associated with the creation of the result image; the first

process requesting that the result image be rendered to the context. However, McCrossin discloses that the first process requests the creation of a context (Col. 5, lines 49-50); the first process indicating parameters associated with the creation of the result image; the first process requesting that the result image be rendered to the context (Col. 6, lines 51-58; Col. 6, lines 9-21). This would be obvious for the same reasons given in the rejection for Claim 1.

48. With regard to Claim 29, Olano describes that the creation of the result image comprises editing a pre-existing image (Col. 6, lines 50-67).

49. With regard to Claim 30, Claim 30 is similar in scope to Claim 4, and therefore is rejected under the same rationale.

50. With regard to Claim 31, Olano describes that the step of optimizing a graph representing the first image (Col. 4, lines 30-36) comprises the step of analyzing adjacent nodes in the graph for the purpose of attempting to consolidate nodes (Col. 5, lines 33-45).

51. With regard to Claim 32, Claim 32 is similar in scope to Claim 31, and therefore is rejected under the same rationale.

52. With regard to Claim 36, Olano describes that the first process requests the output of a graph programmatically assembled by the first process (Col. 4, lines 11-35; Col. 2, lines 45-56).

However, Olano does not teach that the graph comprises one or more pre-defined filters. However, McCrossin discloses that the graph comprises one or more pre-defined filters (Col. 6, lines 59-67). This would be obvious for the same reasons given in the rejection for Claim 1.

53. With regard to Claim 37, Olano describes that the first process programmatically assembled the graph in cooperation with the second process (Col. 4, line 61-Col. 5, line 19).

54. With regard to Claims 38-40, these claims are similar in scope to Claim 15-17 respectively, and therefore are rejected under the same rationale. With regard to Claim 41, Claim 41 is similar in scope to Claim 40, and therefore is rejected under the same rationale.

55. With regard to Claim 43, Claim 43 is similar in scope to Claim 28, except Claim 43 has the additional limitation that the first process and second process are running on a first microprocessor, and the rendering occurs on a second microprocessor. Olano discloses that the first process and second process are running on a first microprocessor, and the rendering occurs on a second microprocessor (Col. 3, lines 48-53; Col. 4, lines 30-35). Therefore, Claim 43 is rejected under the same rationale as Claim 28.

56. With regard to Claims 44-47 and 51-56, these claims are similar in scope to Claims 29-32 and 36-41 respectively, and therefore are rejected under the same rationale.

57. With regard to Claim 58, Olano describes a method for providing a high level interface to a graphics processing resource (Col. 4, lines 47-53) comprising a first process requesting performance of a task through one or more function calls serviced by the graphics processing resource (Col. 4, lines 11-21), the function calls selected from one or more of the following options: (i) creating of an image (Col. 10, lines 59-65); said request having an object associated therewith, the object comprising one of the following: an image (Col. 4, lines 15-21); the graphics processing resource servicing the request (Col. 4, lines 30-35).

However, Olano does not teach that the request defines a relationship between at least one of the functions and one of the objects. However, McCrossin discloses that the request defines a relationship between at least one of the functions and one of the objects (Col. 6, line 46-Col. 7, line 9). This would be obvious for the same reasons given in the rejection for Claim 1.

58. With regard to Claim 61, Olano describes the additional step of creating a graph representing an image (Col. 5, lines 3-19).

59. With regard to Claim 62, Olano describes the additional step of optimizing the graph (Col. 4, lines 30-35; Col. 5, lines 3-19).

60. With regard to Claims 63, 64, 66, and 67, these claims are similar in scope to Claims 58, 59, 61, and 62 respectively, and therefore are rejected under the same rationale.

61. With regard to Claim 68, Olano does not teach that the function calls include the option of creating a filter. However, McCrossin discloses that the function calls include the option of creating a filter (Col. 6, lines 59-67). This would be obvious for the same reasons given in the rejection for Claim 1.

62. With regard to Claim 69, Olano does not teach that the function calls include the option of setting arguments associated with the filter. However, McCrossin discloses that the function calls include the option of setting arguments associated with the filter (Col. 7, lines 1-7; Col. 6, lines 9-21). This would be obvious for the same reasons given in the rejection for Claim 1.

63. With regard to Claim 70, Claim 70 is similar in scope to Claim 69, and therefore is rejected under the same rationale.

64. With regard to Claim 71, Olano does not teach that said another object associated with the request may comprise a filter. However, McCrossin discloses that said another object associated with the request may comprise a filter (Col. 6, lines 59-67). This would be obvious for the same reasons given in the rejection for Claim 1.

65. With regard to Claim 72, Olano does not teach that another object associated with the request may be a vector. However, McCrossin discloses that another object associated with the request may be a vector (Col. 7, lines 14-17). This would be obvious for the same reasons given in the rejection for Claim 1.

66. With regard to Claim 73, Claim 73 is similar in scope to Claim 72, and therefore is rejected under the same rationale.

67. With regard to Claim 74, Olano describes a method for rendering an image comprising the steps of: a first process running on a CPU requesting the creation of an image; a graphics services resource, responding to the request by running a first routine on the CPU (Col. 4, lines 30-36; Col. 3, lines 48-53), the first routine for optimizing a graph representing the image; the graphics services resource causing the rendering of the graph representing the image, the rendering occurring on a GPU (Col. 4, lines 30-36).

However, Olano does not teach that the first process requests the rendering of the image to a specified context. However, McCrossin discloses that the first process requests the rendering of the image to a specified context (Col. 6, lines 9-16). This would be obvious for the same reasons given in the rejection for Claim 1.

68. With regard to Claim 85, Olano discloses a computer-readable medium having computer executable instructions for performing the method (Col. 12, lines 58-67) recited in Claim 1.

69. Claims 3, 33-35, and 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olano (US006717599B1) and McCrossin (US006600840B1) in view of Levy (US 20020033844A1).

70. With regard to Claim 3, Olano and McCrossin are relied upon for the teachings as discussed above relative to Claim 2.

However, Olano and McCrossin do not teach that the step of optimizing includes the step of using a cache look-up to see if the pixel-image result is already in cache. However, Levy describes that the step of optimizing includes the step of using a cache look-up to see if the pixel-image result is already in cache [0184, 0021, 0038].

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the devices of Olano and McCrossin so that the step of optimizing includes the step of using a cache look-up to see if the pixel-image result is already in cache as suggested by Levy because Levy suggests the advantage of avoiding repeated read operations on the same content [0184].

71. With regard to Claim 33, Olano discloses the step of analyzing adjacent nodes (Col. 5, lines 3-19, 33-45) and storing the result of such analysis in memory (Col. 5, lines 61-67).

However, Olano does not teach the step of checking a cache to determine if the result of such analysis is available in a memory. However, Levy describes the step of checking a cache to determine if the pixel-image result is available in a memory [0184, 0021, 0038]. This would be obvious for the same reasons given in the rejection for Claim 3.

72. With regard to Claim 34, Olano discloses the step of optimizing the graph (Col. 4, lines 30-36; Col. 5, lines 3-19) and storing the optimized graph in memory (Col 5, lines 3-19, 33-45).

However, Olano does not teach the step of checking a cache to determine if the graph has already been optimized. However, Levy describes the step of checking a cache to determine if the pixel-image result is already in memory [0184, 0021, 0038]. This would be obvious for the same reasons given in the rejection for Claim 3.

73. With regard to Claim 35, Olano discloses the step of optimizing the graph (Col. 4, lines 30-36; Col. 5, lines 3-19) and storing the result of rendering the graph in memory (Col. 21-23, 32-33).

Olano does not teach the step of checking a cache to determine if the result of rendering the graph is available in a memory. However, Levy describes the step of checking a cache to determine if the pixel-image result is available in a memory [0184, 0021, 0038]. This would be obvious for the same reasons given in the rejection for Claim 3.

74. With regard to Claims 48-50, these claims are similar in scope to Claims 33-35 respectively, and therefore are rejected under the same rationale.

75. Claims 7, 9, 60, and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olano (US006717599B1) and McCrossin (US006600840B1) in view of Parikh (US006411301B1).

76. With regard to Claim 7, Olano and McCrossin are relied upon for the teachings as discussed above relative to Claim 1.

However, Olano and McCrossin do not teach that the compiled program is for a single microprocessor. However, Parikh describes that the compiled program is for a single microprocessor (Col. 26, lines 29-62).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the devices of Olano and McCrossin so that the compiled program is for a single microprocessor as suggested by Parikh because Parikh suggests the advantage of still being able to perform the graphics processing even when a graphics processor for which the software is written for is not available (Col. 26, lines 29-62).

77. With regard to Claim 9, Olano does not teach that the single microprocessor is a CPU. However, Parikh describes that the single microprocessor is a CPU (Col. 26, lines 29-62). This would be obvious for the same reasons given in the rejection for Claim 7.

78. With regard to Claim 60, Olano does not teach that the request is serviced using an emulator to run a GPU program on a CPU. However, Parikh describes that the request is serviced using an emulator to run a GPU program on a CPU (Col. 26, lines 29-62). This would be obvious for the same reasons given in the rejection for Claim 7.

79. With regard to Claim 65, Claim 65 is similar in scope to Claim 60, and therefore is rejected under the same rationale.

80. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olano (US006717599B1), McCrossin (US006600840B1), and Parikh (US006411301B1) in view of Doyle (US006867779B1).

Olano, McCrossin, and Parikh are relied upon for the teachings as discussed above relative to Claim 7.

However, Olano, McCrossin, and Parikh do not teach that the single microprocessor is a programmable GPU. However, Doyle discloses dividing up the rendering between the CPU and the GPU based on the progress of one device of the two devices (Col. 1, lines 20-26; Col. 2, lines 1-3). Therefore, if the CPU is busy, the rendering is only performed in the GPU. Therefore, Doyle discloses that the single microprocessor is a programmable GPU.

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the devices of Olano, McCrossin, and Parikh so that the single microprocessor is a programmable GPU as suggested by Doyle because Doyle suggests the advantage of using the device that would most quickly process the command to process the command (Col. 1, lines 20-26).

81. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olano (US006717599B1) and McCrossin (US006600840B1) in view of Sturges (US005854637A).

Olano and McCrossin are relied upon for the teachings as discussed above relative to Claim 22.

However, Olano and McCrossin do not teach that the first, second and third memories are the same. However, Sturges discloses a system with an API (Col. 11, lines 42-45), comprising using a shared memory for both the system memory and the frame buffer (Col. 3, lines 7-15).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the devices of Olano and McCrossin so that the first, second and third memories are the same as suggested by Sturges because Sturges suggests the advantage of being able to use unused portions of the frame buffer memory to be employed as system memory (Col. 1, lines 35-41).

82. Claims 42 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olano (US006717599B1) and McCrossin (US006600840B1) in view of Stokes (US006977661B1).

83. With regard to Claim 42, Olano and McCrossin are relied upon for the teachings as discussed above relative to Claim 28. Olano teaches that the second process inserts nodes into the graph for performing certain functions (Col. 5, lines 3-19).

However, Olano and McCrossin do not teach that the functions include functions for converting an original color scheme to an operating color scheme and for converting the operating color scheme back to the original color scheme. However, Stokes discloses converting an original color scheme to an operating color scheme and converting the operating color scheme back to the original color scheme (Col. 5, lines 63-67).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the devices of Olano and McCrossin so that the second process inserts nodes

into the graph for converting an original color scheme to an operating color scheme and for converting the operating color scheme back to the original color scheme as suggested by Stokes because Stokes suggests that this is needed because the color data generated by an image-capturing device are generally in a device-specific color space that is different from the color space or spaces used by the image-processing application for image editing (Col. 1, lines 40-44).

84. With regard to Claim 57, Claim 57 is similar in scope to Claim 42, and therefore is rejected under the same rationale.

85. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olano (US006717599B1) and McCrossin (US006600840B1) in view of Doyle (US006867779B1).

Olano and McCrossin are relied upon for the teachings as discussed above relative to Claim 58.

However, Olano and McCrossin do not teach that the request is serviced using a GPU and a CPU. However, Doyle teaches that the request is serviced using a GPU and a CPU (Col. 2, lines 1-3).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the devices of Olano and McCrossin so that the request is serviced using a GPU and a CPU as suggested by Doyle because Doyle suggests that this accelerates the speed by which a three-dimensional image can be rendered (Col. 1, lines 7-10).

86. Claims 76 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olano (US006717599B1) in view of Levy (US 20020033844A1).

87. With regard to Claim 76, Olano is relied upon for the teachings as discussed above relative to Claim 75. Olano teaches the step of determining if the first node may be combined with the second node, and the result is stored in memory (Col. 5, lines 33-60).

However, Olano does not teach the step of checking a cache to determine if there is a result already in memory regarding such determination regarding combining nodes. However, Levy discloses the step of checking a cache to determine if the pixel-image result is already in memory [0184, 0021, 0038]. This would be obvious for the same reasons given in the rejection for Claim 3.

88. With regard to Claim 77, Olano discloses the step of resolving the first node and storing the resolution of the first node in memory (Col. 5, lines 33-60).

Olano does not teach that the step of resolving the first node comprises the step of checking a cache to determine if there is a result in memory regarding the resolution of the first node. However, Levy discloses the step of checking a cache to determine if the pixel-image result is already in memory [0184, 0021, 0038]. This would be obvious for the same reasons given in the rejection for Claim 3.

89. Claim 78 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olano (US006717599B1) in view of French (US006266053B1).

Olano is relied upon for the teachings as discussed above relative to Claim 75.

However, Olano does not teach that the first node is a root node. However, French describes that the first node is a root node (Col. 3, lines 65-66).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the device of Olano so that the first node is a root node as suggested by French. French suggests that many elements of media context are heavily time dependent (Col. 3, lines 10-28), and root nodes are needed in order to integrate a time context and time inheritance into a graph oriented scene modeling system without requiring the adoption or learning of a new programming language (Col. 4, lines 32-36; Col. 6, lines 15-23).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joni Hsu whose telephone number is 571-272-7785. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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